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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,597	EMONGKONCHAI, ADISORN	
	Examiner	Art Unit	
	NATHAN M. CURS	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 23-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The incorporation by reference of US Patent Application No. 10/754931 serves as an "essential material" basis for the claim limitations that recite a first terminating node provisioning another path to reach the same destination of a first unidirectional path, bypassing at least one node of the first unidirectional path, in response to loss of light indicating an LOS. Therefore, the incorporation by reference statement should be changed to refer to the publication of the application (US Patent Application Publication No. 2004/0247317). "Essential material" may be incorporated by reference, but only by way of an incorporation by reference to a **U.S. patent** or **U.S. patent application publication**, which patent or patent application publication does not itself incorporate such essential material by reference (see 37 CFR 1.57(c)).

Appropriate correction is required.

Claim Objections

2. Claims 1, 9, 17, 25 and 26 are objected to because of the following informalities:

In claim 1 lines 10-11, the following change should be made for proper grammar: "…wherein in response to ~~lost~~ loss of the at least a portion of light, which is used as an indication of ~~lost~~ loss of signal…" Similar changes should be made in claims 9, 17, 25 and 26.

In claim 25, the following changes should be made for clarity: in line 3, "detecting at [[a]] the node" in light of "a node" recited in line 1; in line 9 "determining within the node whether the node is [[a]] the second terminating node"; in line 11 "if it is determined that the node is [[a]] the second terminating node"; and in lines 22-23 "if it is determined that the node is not [[a]] the

second terminating node". Since there are only two terminating nodes for the claimed optical circuit, and the claimed first terminating node is the origination node that is signaled by removal of light, then the terminating node that removes that light must necessarily be the second terminating node, and not simply "a terminating node" such as the first terminating node.

In claim 26, the following changes should be made for clarity: in lines 10-11 "determine whether the node is [[a]] the second terminating node"; in lines 12-13 "if it is determined that the node is [[a]] the second terminating node"; and in lines 19-20 "if it is determined that the node is not [[a]] the second terminating node". Since there are only two terminating nodes for the claimed optical circuit, and the claimed first terminating node is the origination node that is signaled by removal of light, then the terminating node that removes that light must necessarily be the second terminating node, and not simply "a terminating node" such as the first terminating node.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The claim in lines 7-8 recites "the first terminating node and the second terminating node forming the optical

circuit", implying no other nodes. However, the scope of the claim includes the option that the node performing the method is another, non-terminating node. For that case, the optical circuit must include the non-terminating node between the two terminating nodes.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The claim in lines 8-9 recites "the first terminating node and the second terminating node forming the optical circuit", implying no other nodes. However, the scope of the claim includes the option that the node of the claimed apparatus is another, non-terminating node. For that case, the optical circuit must include the non-terminating node between the two terminating nodes.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwaki et al. ("Iwaki") (US Patent Application Publication No. 2002/0024690) in view of Heiles et al. ("Heiles") (US Patent Application Publication No. 2005/0013532).

Regarding claim 1, Iwaki discloses a method performed by a node of a wavelength multiplex optical network, the method comprising: detecting at a node that at least a portion of a first unidirectional path of an optical circuit is down, the first unidirectional path being originated from a first terminating node for reach a second terminating node as a destination of the first unidirectional path (figs. 25 and 27 and paragraphs 0004-0014 and 0022-0025, where element

110a is the first terminating node and element 110d is the second terminating node and the failed path is the first unidirectional path); and signaling the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the optical circuit, to indicate a path between the node and the first terminating node is down (paragraphs 0025-0026). Iwaki does not disclose that in response to loss of the at least a portion of light, which is used as an indication of loss of signal (LOS), the first terminating node is configured to provision another path to reach the second terminating node as the same destination of the first unidirectional path, bypassing at least one node between the first terminating node and the second terminating node of the first unidirectional path. Heiles discloses an optical network where a pair of unidirectional fibers between two nodes is protected by a disjoint pair of unidirectional fibers, such that in response to a loss of light detected at the second node on a primary path, the second node signals the first node by removing light in an opposite direction by optically switching from the primary pair of fibers to the protection pair of fibers, and in response the first node provisions another path to reach the second node by way of optically switching to the protection pair of fibers (figs. 1 and 2 and paragraphs 0025-0029). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Iwaki, in light of Heiles, adding optical switches at the terminating nodes and adding a protection pair of paths between the terminating nodes, such that in response to the LOS detected at the second terminating node of Iwaki, the second terminating node optically switches to the protection pair of paths in addition to removing the opposite-direction light, and the first terminating node switches to the protection pair of paths based on detecting the removed light, to provide the benefit of continuing bidirectional optical communications between the terminating nodes via the protection paths in the event of a failure.

Regarding claim 2, the combination of Iwaki and Heiles discloses the method of claim 1, wherein the first terminating node is notified of the detection by not receiving at least a portion of the light of the second unidirectional path (Iwaki: paragraph 0026).

Regarding claim 3, the combination of Iwaki and Heiles discloses the method of claim 1, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path (Iwaki: paragraph 0024).

Regarding claim 4, the combination of Iwaki and Heiles discloses the method of claim 1, further comprising: detecting a wavelength of the first unidirectional path (first path/wavelength) is down (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light); and signaling the first terminating node via a second path/wavelength of the second unidirectional path with respect to the status of the first path/wavelength (Iwaki: paragraphs 0024-0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 5, the combination of Iwaki and Heiles discloses the method of claim 4, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light), and wherein the first terminating node is notified by not receiving the light of the second path/wavelength (Iwaki: paragraphs 0024-0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 6, the combination of Iwaki and Heiles discloses the method of claim 1, further comprising: determining whether the node is a terminating node of the optical circuit with

respect to the first unidirectional path, wherein the signaling is performed only if the node is a terminating node of the optical circuit (Iwaki: fig. 27 elements 36 and 37 and paragraph 0024).

Regarding claim 7, the combination of Iwaki and Heiles discloses the method of claim 1, wherein the first and second unidirectional paths are within different fibers (Iwaki: fig. 27).

Regarding claim 8, the combination of Iwaki and Heiles discloses the method of claim 1, wherein the signaling is performed without converting optical signals of the first unidirectional path to electrical signals (Iwaki: fig. 27 element 110d and paragraph 0024).

Regarding claim 9, Iwaki discloses an apparatus, comprising: a node to be coupled to a wavelength division multiplex optical network (fig. 27 element 110d and paragraphs 0022-0024), the node including, a detection module to detect that at least a portion of a first unidirectional path of an optical circuit is down, the first unidirectional path being originated from a first terminating node for reaching a second terminating node as a destination of the first unidirectional path (fig. 27 element 36 and paragraph 0024), and a control module coupled to the detection module to signal the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the optical circuit, to indicate that a path between the node and the first terminating node is down (fig. 27 element 37 and paragraph 0026). Iwaki does not disclose that in response to loss of the at least a portion of light, which is used as an indication of loss of signal (LOS), the first terminating node is configured to provision another path to reach the second terminating node as the same destination of the first unidirectional path, bypassing at least one node between the first terminating node and the second terminating node of the first unidirectional path. Heiles discloses an optical network where a pair of unidirectional fibers between two nodes is protected by a disjoint pair of unidirectional fibers, such that in response to a loss of light detected at the second node on a primary path, the second node signals the first node by

removing light in an opposite direction by optically switching from the primary pair of fibers to the protection pair of fibers, and in response the first node provisions another path to reach the second node by way of optically switching to the protection pair of fibers (figs. 1 and 2 and paragraphs 0025-0029). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Iwaki, in light of Heiles, adding optical switches at the terminating nodes and adding a protection pair of paths between the terminating nodes, such that in response to the LOS detected at the second terminating node of Iwaki, the second terminating node optically switches to the protection pair of paths in addition to removing the opposite-direction light, and the first terminating node switches to the protection pair of paths based on detecting the removed light, to provide the benefit of continuing bidirectional optical communications between the terminating nodes via the protection paths in the event of a failure.

Regarding claim 10, the combination of Iwaki and Heiles discloses the apparatus of claim 9, wherein the first terminating node is notified of the detection by not receiving at least a portion of light of the second unidirectional path (Iwaki: paragraph 0026).

Regarding claim 11, the combination of Iwaki and Heiles discloses the apparatus of claim 9, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path (Iwaki: paragraph 0024).

Regarding claim 12, the combination of Iwaki and Heiles discloses the apparatus of claim 9, wherein the detection module detects a wavelength of the first unidirectional path (first path/wavelength) is down (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light), and wherein the control module signals the first terminating node via a second wavelength of the second unidirectional path (second path/wavelength) with respect to the status of the first path/wavelength (Iwaki: paragraphs 0024-

0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 13, the combination of Iwaki and Heiles discloses the apparatus of claim 12, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light), and wherein the first terminating node is notified by not receiving the light of the second path/wavelength (Iwaki: paragraphs 0024-0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 14, the combination of Iwaki and Heiles discloses the apparatus of claim 9, wherein the control module further determines whether the node is a terminating node of the first unidirectional path of the optical circuit, and wherein the control module signals the first terminating node only if the node is a terminating node of the optical circuit (Iwaki: fig. 27 elements 36 and 37 and paragraph 0024).

Regarding claim 15, the combination of Iwaki and Heiles discloses the apparatus of claim 14, wherein the first and second unidirectional paths are within different fibers (Iwaki: fig. 27).

Regarding claim 16, the combination of Iwaki and Heiles discloses the apparatus of claim 9, wherein the detection module signals the first terminating node without converting the respective optical signals of the first unidirectional path to electrical signals (Iwaki: fig. 27 element 110d and paragraph 0024).

Regarding claim 17, Iwaki discloses a wavelength multiplex optical network, comprising: a plurality of nodes interconnected via one or more links (figs. 25 and 27 and paragraphs 0004-0014 and 0022-0025), each of the plurality of nodes to detect that at least a portion of a first

unidirectional path of an optical circuit is down (paragraphs 0024-0026), the first unidirectional path being originated from a first terminating node for reaching a second terminating node as a destination of the first unidirectional path (fig. 27, element 110a communicating to element 110d), and signal the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the optical circuit, to indicate a path between the respective node and the first terminating node is down if the respective node is a terminating node of the optical circuit (fig. 27 elements 36 and 37 paragraphs 0024 and 0026). Iwaki does not disclose that in response to loss of the at least a portion of light, which is used as an indication of loss of signal (LOS), the first terminating node is configured to provision another path to reach the second terminating node as the same destination of the first unidirectional path, bypassing at least one node between the first terminating node and the second terminating node of the first unidirectional path. Heiles discloses an optical network where a pair of unidirectional fibers between two nodes is protected by a disjoint pair of unidirectional fibers, such that in response to a loss of light detected at the second node on a primary path, the second node signals the first node by removing light in an opposite direction by optically switching from the primary pair of fibers to the protection pair of fibers, and in response the first node provisions another path to reach the second node by way of optically switching to the protection pair of fibers (figs. 1 and 2 and paragraphs 0025-0029). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Iwaki, in light of Heiles, adding optical switches at the terminating nodes and adding a protection pair of paths between the terminating nodes, such that in response to the LOS detected at the second terminating node of Iwaki, the second terminating node optically switches to the protection pair of paths in addition to removing the opposite-direction light, and the first terminating node switches to the protection pair of paths based on

detecting the removed light, to provide the benefit of continuing bidirectional optical communications between the terminating nodes via the protection paths in the event of a failure.

Regarding claim 18, the combination of Iwaki and Heiles discloses the network of claim 17, wherein the first terminating node is notified of the detection by not receiving at least a portion of the light of the second unidirectional path (Iwaki: paragraph 0026).

Regarding claim 19, the combination of Iwaki and Heiles discloses the network of claim 17, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path (Iwaki: paragraph 0024).

Regarding claim 20, the combination of Iwaki and Heiles discloses the network of claim 17, wherein the node further detects a wavelength of the first unidirectional path (first path/wavelength) is down (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light), and signals the first terminating node via a second path/wavelength of the second unidirectional path with respect to the status of the first path/wavelength (Iwaki: paragraphs 0024-0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 21, the combination of Iwaki and Heiles discloses the network of claim 20, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength (Iwaki: paragraphs 0023-0024, where detecting loss of WDM light reads on detecting loss of wavelength light), and wherein the first terminating node is notified by not receiving the light of the second path/wavelength (Iwaki: paragraphs 0024-0026, where stopping WDM light transmission to the first node in order to communicate status to the first node reads on signaling to the first node using a wavelength of the WDM light).

Regarding claim 23, the combination of Iwaki and Heiles discloses the network of claim 17, wherein the first and second unidirectional paths are within different fibers (Iwaki: fig. 27).

Regarding claim 24, the combination of Iwaki and Heiles discloses the network of claim 17, wherein the signaling is performed without converting optical signals of the first unidirectional path to electrical signals (Iwaki: fig. 27 element 110d and paragraph 0024).

Allowable Subject Matter

7. Claims 25 and 26 would be allowable if rewritten or amended to overcome the objections and the rejections under 35 USC § 112-2nd paragraph, set forth in this Office action.

Response to Arguments

8. Applicant's arguments filed 24 January 2008, with respect to the rejections under 35 USC § 112-1st paragraph have been fully considered and are persuasive. Therefore, the previous rejections under 35 USC § 112-1st paragraph and 35 USC § 102 have been withdrawn. However, the incorporation by reference of US Patent Application Publication No. 2004/0247317 must be corrected in the specification as described above, and upon further consideration, new grounds of rejection are made under 35 USC § 112-2nd paragraph for amended claims 25 and 26 and under 35 USC § 103 in view of Iwaki and Heiles for claims 1-21, 23 and 24.

Conclusion

9. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/NATHAN M CURS/

Examiner, Art Unit 2613